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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/674,648	01/05/2001	Bodo Furchheim	7054-101XX	1304

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EXAMINER	
KIM, CHONG HWA	

ART UNIT	PAPER NUMBER
3682	

DATE MAILED: 06/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/674,648	FURCHHEIM ET AL.	
	Examiner	Art Unit	
	Chong H. Kim	3682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 March 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,8,11,12 and 14-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,8,11,12,14-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The Examiner acknowledges the applicant's Amendment filed Mar 5, 2004 in response to the Office action made on Sep 9, 2003.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 8, 14, 16, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki, U.S. Patent 4,660,269.

Suzuki shows, in Figs. 1-12, a method for the manufacture of a camshaft from a tube 2, the camshaft having bearer rings 3 attached thereto, the method comprising the following steps;

producing bearer rings in correspondence with an outline of the cams on the cam shaft, the bearer rings having an even wall thickness (in a cross sectional view) and the necessary hardness, strength, and wear resistance, in a separate method;

placing the tube and the bearer tings in a high internal pressure forming tool 20;

applying axial forces to the ends of the tube;

applying a medium under a high internal pressure to the tube, whereby the tube is expanded in defined region to form hollow cams and whereby the bearer rings are attached to the tube of the sited of the cams in a frictional and interlocking manner by expansion of the tube;

characterized in that in a step prior to such high internal pressure forming, regions that lie at the end of the tube outside the regions in which the cams are seated, are upset that same are increased in thickness for forming different functional elements 6;

characterized in that between the cam shaft ends in a step prior to internal high pressure forming bearing faces and the eventual region where the cams are to be seated, are produced by round kneading and by reducing the diameter in this part to the desired size;

characterized in that between the cams bearing faces are produced by internal high pressure forming by expanding the tube;

characterized in that the bearer rings are hardened in a known manner prior to being placed in the internal high pressure forming tool;

characterized in that the ends of the tube comprise bearing faces, drive and/or control elements 4 and internal and/or external screw threads;

characterized by additional drive and control elements, preferably sprocket or gear wheels, secured by the internal high pressure forming method;

characterized in that the side, facing the tube of the bearer ring has chamfers on both sides on the side facing the tube; and

characterized in that the bearer rings are hardened prior to application on the formed cams.

3. Claims 1-5, 8-12, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Ebbinghaus et al., U.S. Patent 5,259,268.

Ebbinghaus et al. shows, in Figs. 1-7, a method for the manufacture of a cam shaft from a tube 12, the cam shaft having bearer rings 14 attached thereto, the method comprising the following steps;

producing bearer rings in correspondence with an outline of the cams on the cam shaft, the bearer rings having an even wall thickness (in a cross sectional view) and the necessary hardness, strength, and wear resistance, in a separate method;

placing the tube and the bearer tings in a high internal pressure forming tool;

applying axial forces to the ends of the tube;

applying a medium under a high internal pressure to the tube, whereby the tube is expanded in defined region to form hollow cams (as shown in Fig. 2) and whereby the bearer rings are attached to the tube of the sited of the cams in a frictional and interlocking manner by expansion of the tube;

(inherent since the specification states that the tube is placed in a closed mold and applied with the internal pressure and axial forces as described in column 3, lines 5-17);

characterized in that in a step prior to such high internal pressure forming, regions that lie at the end of the tube outside the regions in which the cams are seated, are upset that same are increased in thickness for forming different functional elements 16 and 18;

characterized in that between the cam shaft ends in a step prior to internal high pressure forming bearing faces and the eventual region where the cams are to be seated, are produced by round kneading and by reducing the diameter in this part to the desired size (see Fig. 1);

characterized in that between the cams bearing faces are produced by internal high pressure forming by expanding the tube;

characterized in that the bearer rings are hardened in a known manner prior to being placed in the internal high pressure forming tool;

characterized in that the bearer rings consist of sintered metal, or plastic, or ceramic material;

characterized in that the tube consists of aluminum or titanium; and

characterized in that the bearer rings are hardened prior to application on the formed cams.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki.

Suzuki shows, as discussed above in the rejections of claims 1, 8, and 14, the cam shaft being produced by internal pressure, comprising the drive and control elements 4 and 5 having at least one radially extending groove 14, and the tube 2 having a groove (as shown in Fig. 5) to accommodate the bearer ring 3, but fails to show the groove formed in the bearer ring.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the tube and bearer ring attachment as shown by Suzuki by having the groove formed in the bearer ring instead of the tube, since such a modification would have involved a mere switching of the parts for attaching. A reversal or rearrangement of parts is

generally recognized as being within the level of ordinary skill in the art. *In re Japikse*, 86 USPQ 70 (CCPA 1950).

Response to Arguments

6. In response to the applicant's argument that Suzuki is not suited to teach the formation of hollow cams in a camshaft by expansion of the tube because Suzuki teaches the expansion of the hollow tube in the area not covered by cams and other elements, it is the Examiner's view that Suzuki shows every element recited in claim 1. Suzuki shows in Figs. 4 and 12 a space formed between the bearing rings 3 and the tube 2 that is hollow. And in Figs. 3 and 11, the space is eliminated due to the expansion of the hollow tube and the region within the bearing ring is hollow. Therefore, it is very clear that the tube is expanded in defined region to form hollow cams as recited in claim 1.

7. In response to the applicant's argument that Ebbinghaus et al. lack the teaching of the cam formation out of a tube, as discussed above, it is the Examiner's view that Ebbinghaus et al. shows every element recited in claim 1. Ebbinghaus et al. shows in Fig. 7a a space formed between the bearing ring and the tube. And in Fig. 7b, the space is eliminated due to the expansion of the hollow tube and the region within the bearing ring is hollow. Therefore, it is clear again that the tube is expanded in defined region to form hollow cams as recited in claim 1.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chong H. Kim whose telephone number is (703) 305-0922. The examiner can normally be reached on Tuesday - Friday; 8:00 - 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A Bucci can be reached on (703) 308-3668. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

chk
May 28, 2004

CHONG H. KIM
PRIMARY EXAMINER